User's Manual

CITIZEN

CUSTOMER DISPLAY

MODEL C2201-PD

Japan CBM Corporation

INDEX

1 FEATURES

(1) The vacuum fluorescent display provides a wide viewing angle and high - brightness display for easy to see angles.

(2) Supply the standard RS-232C conformance,it is possible to fix the communication speed from 2400 bps to 19200 bps.

(3) Multy - function data display by using easily commands in 20 columns by 2 lines display.

(4) Selectable brightness and selectable height while using.

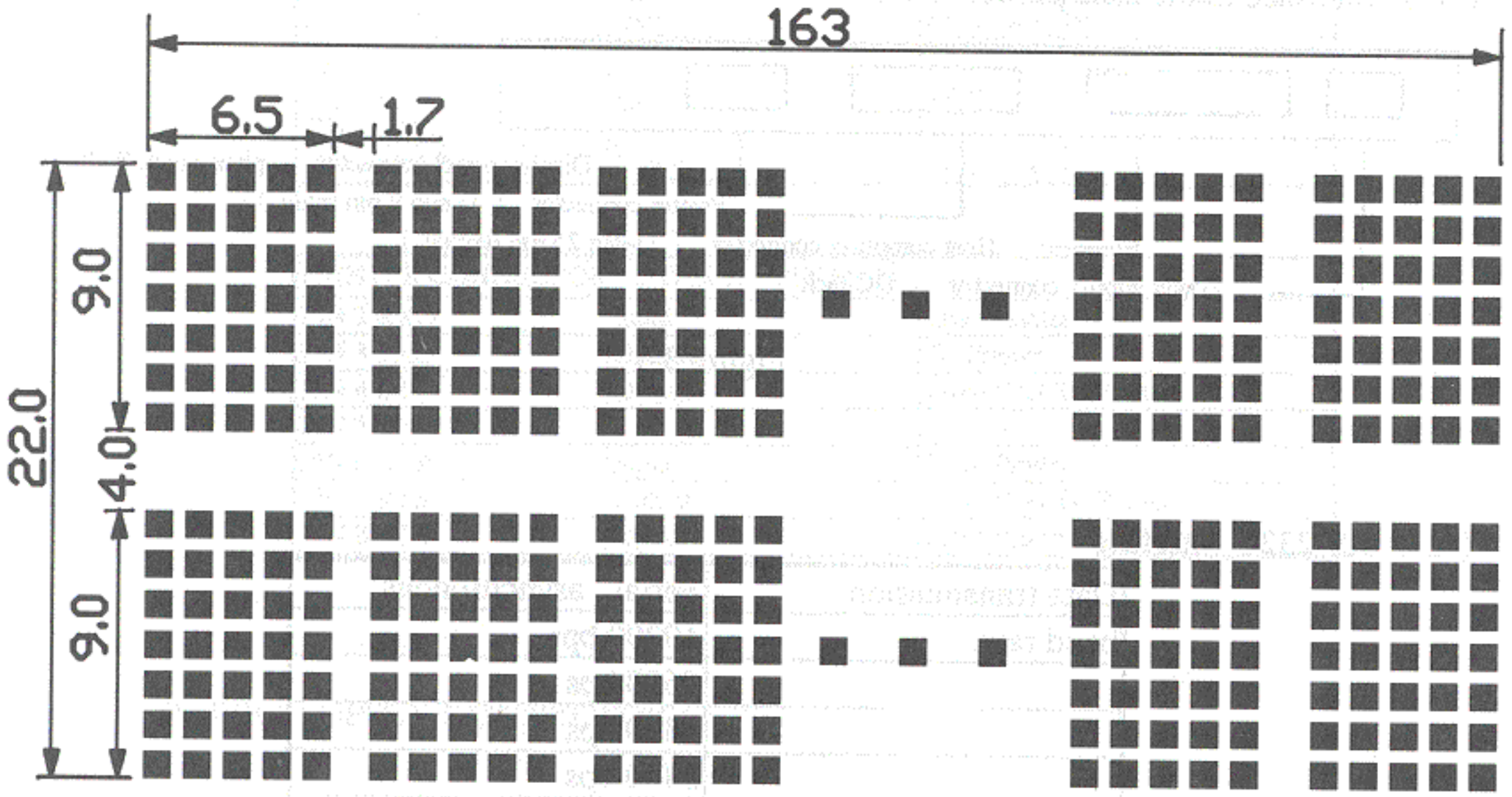
2 SPECIFICATIONS

(1)	Display method:	Vacuum fluorescent display	
(2)	Number of characters:	40 characters (20 columns x 2 lines)	*1
(3)	Display color:	blue green	
(4)	Brightness:	700 cd/m*	
(5)	Character type:	96 Alphanumeric	
		4 kinds of International characters set	*4
(6)	Character font:	5 x 7 dot matrix	*1
(7)	Character size:	6.5 mm x 9 mm	*1
(8)	Character pitch:	8.2 mm	*1
(9)	Power supply voitage:	5V DC ± 5%	
(10)	Power consumption:	5W	
(11)	MTBF:	20000 hours	
(12)	Dimensions:		*2
	Panel:	226mm(W) x 92mm(H) x 50mm(D)	
	Support:	76mm(H) x 33 ϕ *	
		167mm(H) x 33 ϕ	
		308mm(H) x 33 ϕ	
		399mm(H) x 33 ϕ	
	Base section:	227mm(W) x 25mm(H) x 103mm(D)	
(13)	Weight:	0.9kg	
(14)	Viewing angle:	8° - 35°	*3
(15)	Rotation angle:	Maximun 270 degrees	*3

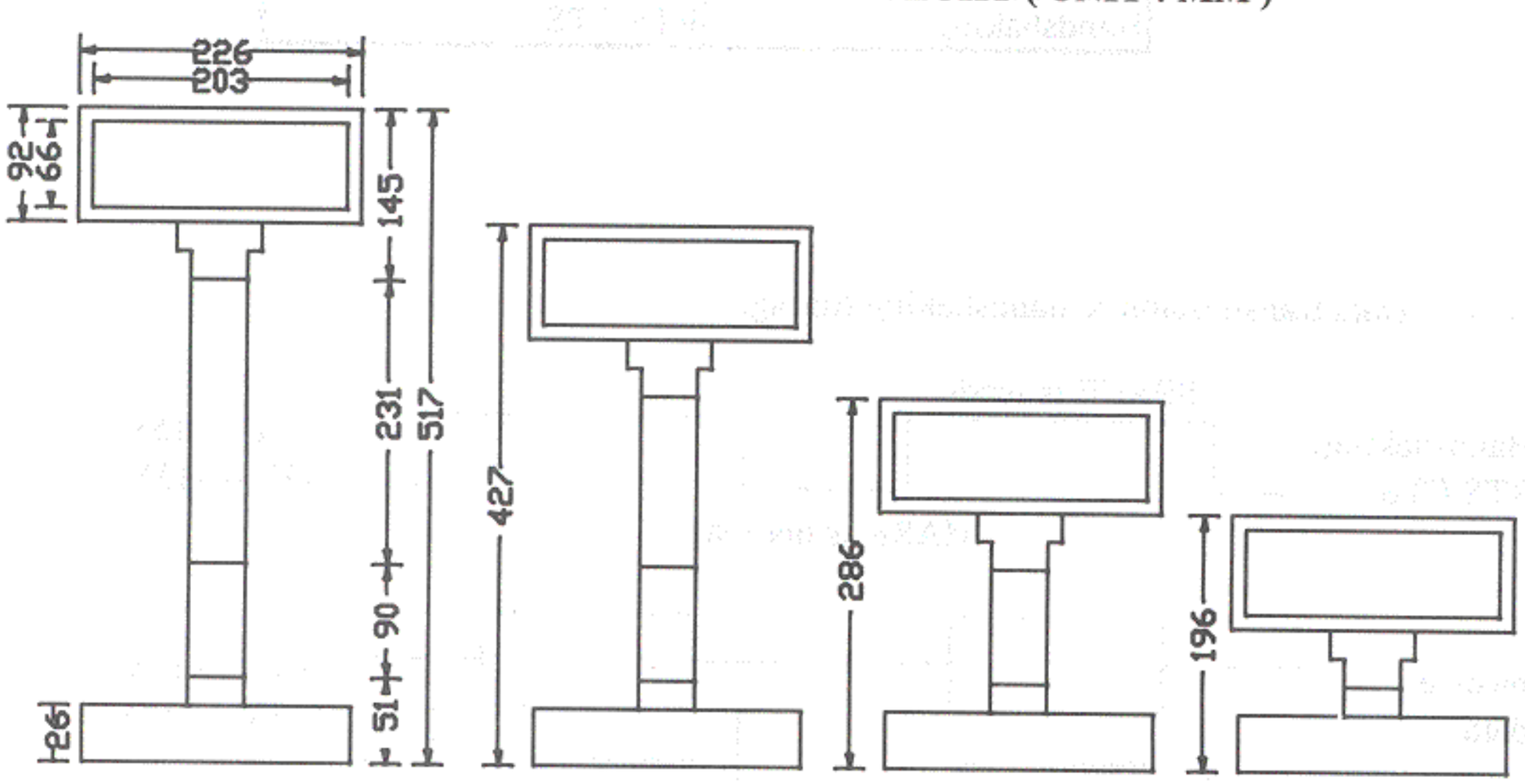
Notes:

*1: Reference Figure 2-1 for detail
*2: Reference Figure 2-2 for detail
*3: Reference Figure 2-3 for detail
*4: Reference table 6-1 to 6-18

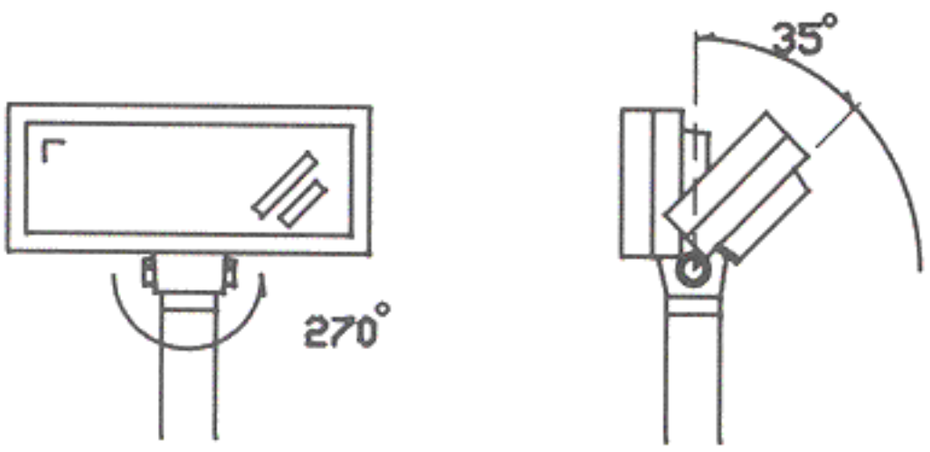
(1) **FIGURE 2-1**
DISPLAY PATTERN SHEET (UNIT : MM)



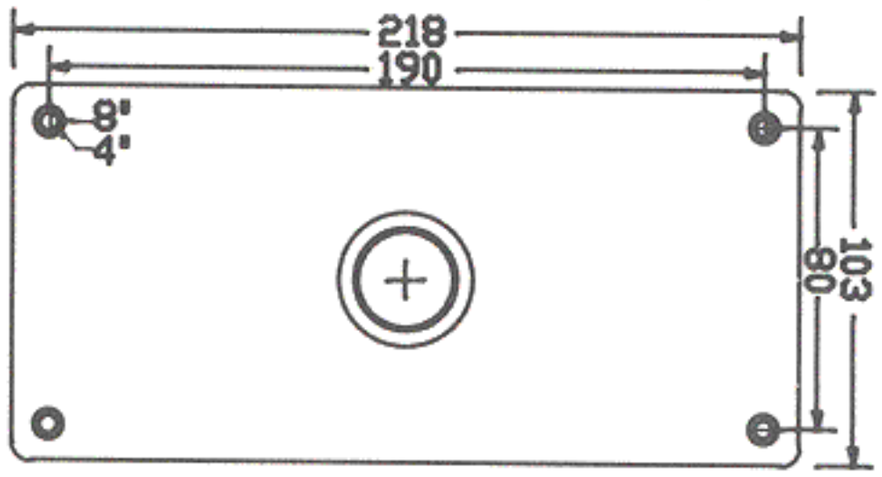
(2) **FIGURE 2-2**
OUTSIDE DIMENSION AND SELECTABLE HIGHT (UNIT : MM)



(3) **FIGURE 2-3**
VIEWING ANGLE & ROTATION



(4) **FIGURE 2-4**
HOLDING (UNIT : MM)



3 INTERFACE

（ 1 ） Interface to the base portion

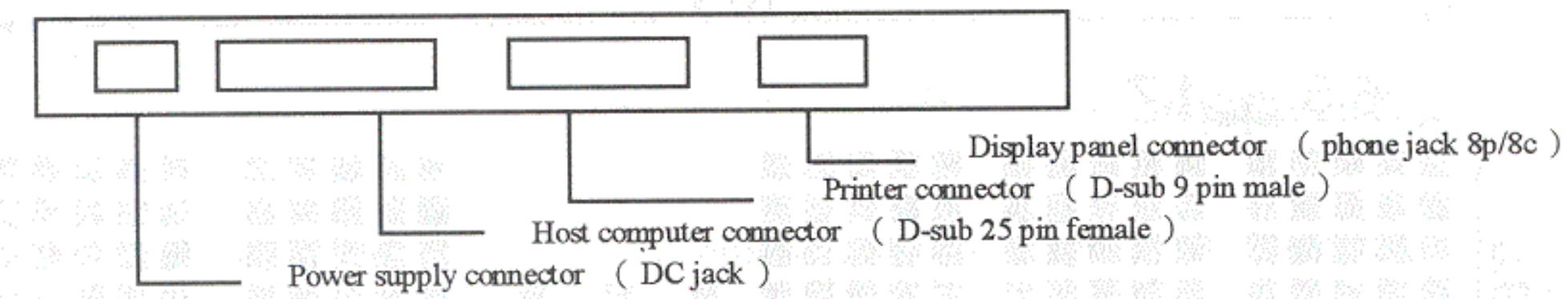


Figure 3-1

（ 2 ） RS-232C Interface

Data transmission :	Serial , asynchronous
baud rate:	19200 bps
	9600 bps
	4800 bps
	2400 bps
data bit:	8 bits 7 bits
parity:	None / Odd / Even
Stop bits:	1 or more
Handshaking:	RTS/CTS

（ 3 ） Data transmission & handshaking timing:

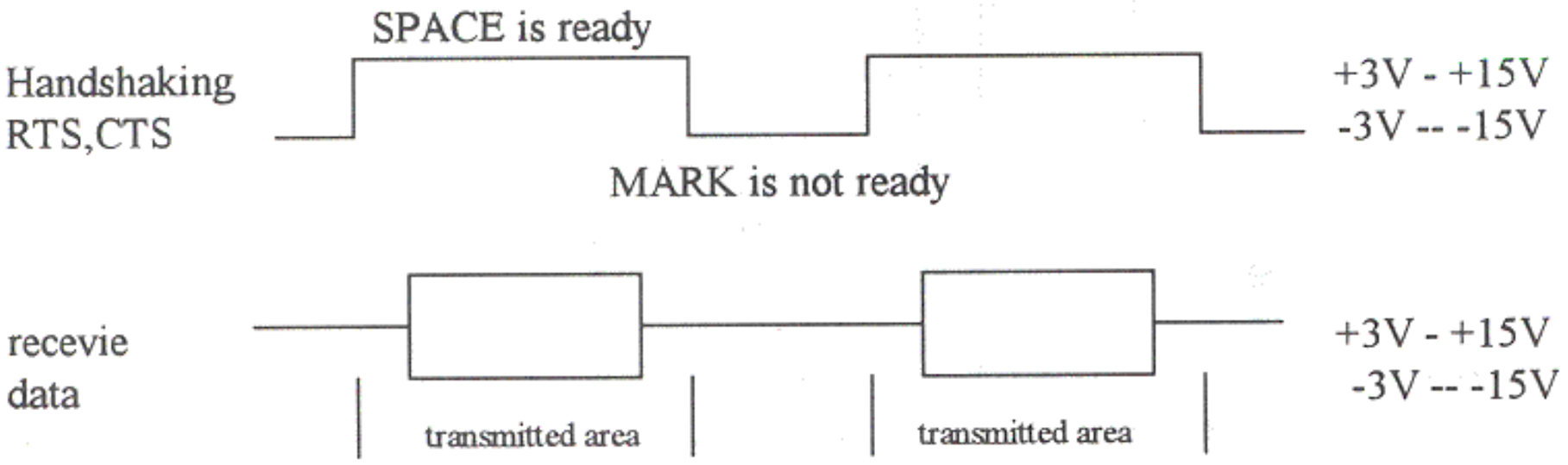


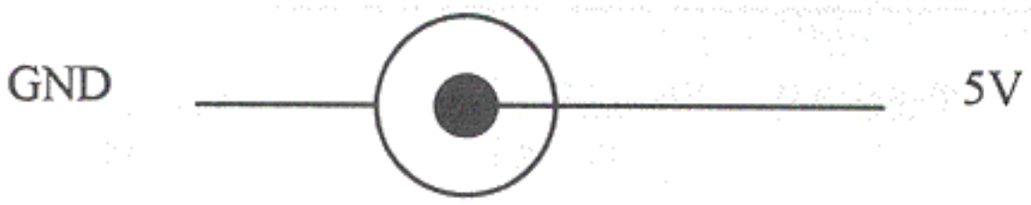
Figure 3-2

(4) RS232C CONNECTOR

PC / HOST CONNECTOR (D-SUB 25 PIN FEMALE)		
PIN 2 TXD	Output	To Printer
PIN 3 RXD	Input	To Display
PIN 4 RTS	Output	From Diskplay
PIN 5 CTS	Input	To Printer
PIN 6 DSR	Input	To Printer
PIN 7 GND		
PIN 20 DTR	Output	From Display

PRINTER CONNECTOR (D-SUB 9 PIN MALE)		
PIN 2 RXD	Input	From Printer
PIN 3 TXD	Output	To Printer
PIN 4 DTR	Output	From Host To Printer
PIN 5 GND		
PIN 6 DSR	Input	From Printer
PIN 7 RTS	Output	From Host To Printer
PIN 8 CTS	Input	From Printer

(5) POWER SUPPLY CONNECTOR



4 DIP SWITCHES SETTING

（1） BAUD RATE

SW number SW1	SW number SW2	Function discription Baud rate （bps）
ON	ON	19200
OFF	ON	9600
ON	OFF	4800
OFF	OFF	2400

Table 4-1

（2） PARITY & DATA BITS

SW number SW3	SW number SW4	Function discription Parity & data bits
ON	ON	Even parity ， 7 bits data bits
OFF	ON	odd parity ， 7 bits data bits
ON	OFF	numparity ， 8 bits data bits
OFF	OFF	numparity ， 8 bits data bits

Table 4-2

（3） INTERNATIONAL CHARACTER SET

SW number SW5	SW number SW6	Function discription international character set
ON	ON	U.S.A.
OFF	ON	GERMANY
ON	OFF	ITALY
OFF	OFF	JAPAN

Table 4-3

5 COMMAND

（1） C2201-PD STANDARD MODE

COMMAND	FUNCTION DISCRIPTION
ESC DC1	Overwrite mode
ESC DC2	Vertical scroll mode
ESC DC3	Horizontal scroll mode
ESC Q A ..	Set the string display mode,writed string to upper line
ESC Q B ..	Set the string display mode,writed string to lower line
ESC [D	Move cursor left
BS	Move cursor left
ESC [C	Move cursor right
HT	Move cursor right
ESC [A	Move cursor up
ESC [B	Move cursor down
LF	Move cursor down
ESC [H	Move cursor to home position
HOM	Move cursor to home position
ESC [L	Move cursor to left-most position
CR	Move cursor to left-most position
ESC [R	Move cursor to right-most position
ESC [K	Move cursor to bottom position
ESC l x y	Move cursor to specified position
ESC @	Initialize display
ESC W	Set or cancel the window range at horizontal scroll mode
CLR	clear display screen , and clear string mode
CAN	Clear cursor line , and clear string mode
ESC * n	Brightness adjustment
ESC _ n	Set cursor ON/OFF
ESC f x	Select international fonts set
ESC c x	Select fonts ,ASCII code or JIS code
ESC = x	Select peripheral device,Display or Printer
ESC = n	Select peripheral device,Display or Printer

Table 5-1

* If using commands "ESC QA" or "ESC QB " ,others commands can not be used except using command "CLR" or "CAN" to change operating mode.

C2201-PD standard command details

ESC DC1 /Overwrite mode/
ASCII Format ESC DC1
Dec. Format [027][017]
Hex. Format [1Bh][11h]
Description Change the display mode to the overwrite mode.In this mode,entering a character code will display at the current position and cursor move to left , when current cursor position at the end of the lower line , the cursor will move to the first position of the upper line , and when current cursor position at the end of the upper line , the cursor will move to the first position of the lower line.

ESC DC2 /Vertical scroll mode/
ASCII Format ESC DC2
Dec. Format [027][018]
Hex. Format [1Bh][12h]
Description Change the display mode to the vertical scroll mode. In this mode,entering a character code will display at the current position and cursor move to left , when current cursor position at the end of the upper line , the cursor will move to the first position of the lower line , when current position at the end of the lower line , C2201-PD will scrolls the lower line to the upper line and clear lower line , and move cursor to the first position of the lower line.

ESC DC3 /Horizontal scroll mode/
ASCII Format ESC DC3
Dec.. Format [027][019]
Hex. Format [1Bh][13h]
Description Change the display mode to the horizontal mode. While entering this mode , the cursor position will move to the end position of the windows define ,(Please reference Set or cancel the window command) , the default windows is whole lower line.

ESC Q A d1d2d3d4d5d6.....dn CR
ESC Q B d1d2d3d4d5d6.....dn CR /Set the string display mode,and writed string to display/
ASCII Format ESC Q A d1d2d3d4d5d6...dn CR
ESC Q B d1d2d3d4d5d6...dn CR
Dec. Format [027][081][065] d1d2d3..dn [013]
[027][081][066] d1d2d3..dn [013]
Hex. Format [1Bh][51h][41h] d1d2d3..dn [0Dh]
[1Bh][51H][42h] d1d2d3..dn [0Dh] {20h<=dn<=ffh}
Description Set the string display mode,writed to the upper or lower line d1 d2 d3 . . . dn {1<=n<=20}
A is stand for upper line , B is stand for lower line . The string display mode will be cancel and back to last mode while receive CLR or CAN.

ESC [D	/Move cursor left/
BS	/Move cursor left/
ASCII Format	ESC [D
Dec. Format	[027][091][068]
Hex. Format	[1Bh][5Bh][44h]
ASCII Format	BS
Dec. Format	[008]
Hex. Format	[08h]
Description	Move the cursor to the left. When the current cursor position at the left end,this command operates differently depending on the display mode. 1. Overwrite mode: When the cursor is at the left end of the lower line,it is moved to the right end of the upper line. When it is at the left end of the upper line,it is moved to the right end of the lower line. 2. Vertical scroll mode: When the cursor is at the left end of the lower line,it is moved to the right end of the upper line. When it is at the left end of the upper line the upper will be cleared. At this time, the cursor is moved to the right end of the upper line. 3. Horizontal scroll mode: The cursor is not moved.

ESC [C	/Move cursor right/
HT	/Move cursor right/
ASCII Format	ESC [C
Dec. Format	[027][091][067]
Hex. Format	[1Bh][5Bh][43h]
ASCII Format	HT
Dec. Format	[009]
Hex. Format	[09h]
Description	Move the cursor to the right. When the cursor is at the right end,this command operates differently depending on the display mode. 1. Overwrite mode: When the cursor is at the right end of the upper line,it is moved to the left end of the lower line. When it is at the right end of the lower line,it is moved to the left end of the upper line. 2. Vertical scroll mode: When the cursor is at the right end of the lower line,it is moved to the left end of the lower line. When it is at the right end of the lower line is cleared. At this time, the cursor is moved to the left end of the lower line. 3. Horizontal scroll mode: The cursor is not moved.

ESC [A	/Move cursor up/
ASCII Forma t	ESC [A
Dec. Format	[027][091][065]
Hex. Format	[1Bh][5Bh][41h]
Description	Move the cursor up one line. When the cursor is on the upper line,this command operates differently depending on the display mode. 1. Overwrite mode: The cursor is moved to the same column on the lower line. 2. Vertical scroll mode: The characters display on the upper line are scrolled to the lower line,and the upper line is cleared. The cursor remains at the same position. 3. Horizontal scroll mode: The cursor is not moved.

ESC [B	/Move cursor down/
LF	/Move cursor down/
ASCII Format	ESC [B
Dec. Format	[027][091][066]
Hex. Format	[1Bh][5Bh][42h]
ASCII Format	LF
Dec. Format	[010]
Hex. Format	[0Ah]
Description	Move the cursor down one line. When the cursor is on the lower line,this command operates differently depending on the display mode. 1. Overwrite mode: The cursor is moved to the same column on the upper line. 2. Vertical scroll mode: The characters display on the lower line are scrolled to the upper line,and the lower line is cleared. The cursor remains at the same position. 3. Horizontal scroll mode: The cursor is not moved.

ESC [H	/Move cursor to home position/
HOM	/Move cursor to home position/
ASCII Format	ESC [H
Dec. Format	[027][091][072]
Hex. Format	[1Bh][5Bh][48h]
ASCII Format	HOM
Dec. Format	[011]
Hex. Format	[0Bh]
Description	Moves the cursor to the left-most position of the upper line

ESC [L	/Move cursor to left-most position/
CR	/Move cursor to left-most position/
ASCII Format	ESC [L
Dec. Format	[027][091][076]
Hex. Format	[1Bh][5Bh][4Ch]
ASCII Format	CR
Dec. Format	[013]
Hex. Format	[0Dh]
Description	Moves the cursor to the left-most position of the currentline.

ESC [R	/Move cursor to right-most position/
ASCII Format	ESC [R
Dec. Format	[027][091][082]
Hex. Format	[1Bh][5Bh][52h]
Description	Moves the cursor to the right-most position of the current line.

ESC [K	/Move cursor to bottom position/
ASCII Format	ESC [K
Dec. Format	[027][091][075]
Hex. Format	[1Bh][5Bh][4Bh]
Description	Moves the cursor to the right-most position on the lower line

ESC 1 x y /Move cursor to specified position/
ASCII Format ESC 1 x y
Dec. Format [027][108] x y { 1<=x<=20 , 1<=y<=2 }
Hex. Format [1Bh][6Ch][x][y]
Description Moves the cursor to the x'th column on the y'th line.

ESC @ /Initialize display/
ASCII Format ESC @
Dec. Format [027][064]
Hex. Format [1Bh][40h]
Description Clear the data in the input buffer and setting ,like power on .

ESC W s x1x2 y /Set or cancel the window /
ASCII Format ESC W s x1 x2 y
Dec. Format [027][087][000]
[027][087][001] x1 x2 y { 1<=x1<=x2<=20 , 1<=y<=2 }
Hex. Format [1Bh][57h][000]
[1Bh][57H][01h][x1][x2][y]
Description Sets or cancels the window on the display screen. When s = 0 ,window is canceled.(the Values x1 x2 y are not required)
When s = 1 ,window is set.(the Values x1 x2 y are required) x1 and x2 set the position of left column and right column of the window. y set upper line or lower line the window is effective within the horizontal mode.

CLR /Clear display screen,and clear string mode/
ASCII Format CLR
Dec. Format [012]
Hex. Format [0Ch]
Description Clear all of the displayed characters , clear string mode

CAN /Clear current line,and clear string mode/
ASCII Format CAN
Dec. Format [024]
Hex. Format [18h]
Description Clear the line containing the cursor , clear string mode

ESC * n /Brightness adiustment /
ASCII Format ESC * n
Dec. Format [027][042] n {3<=n<=4}
Hex. Format [1Bh][2Ah][n]
Description Brightness adjustment Adjusts the brightness of the vacuum fluorescent display.
When n = 3 ,brightness = 70 %
When n = 4 ,brightness =100 %

ESC _ n /Set cursor ON or OFF /
ASCII Format ESC _ n
Dec. Format [027][095] n {0<=n<=1}
Hex. Format [1Bh][5Fh][n]
Description : Set cursor ON or OFF
When n = 0 ,cursor OFF
When n = 1 ,cursor ON

ESC f n /Select international fonts set/
ASCII Format ESC f n
Dec. Format [027][102] n
Hex. Format [1Bh][66h][n]
Description Set international font set

n	internation font set
A	U.S.A.
G	GERMANY
I	ITALY
J	JAPAN

ESC c n /Select fonts /
ASCII Format ESC c n
Dec. Format [027][099] n
Hex. Format [1Bh][63h][n]
Description Select fonts

n	internation font set
A	compliance with ASCII code
J	compliance with JIS code

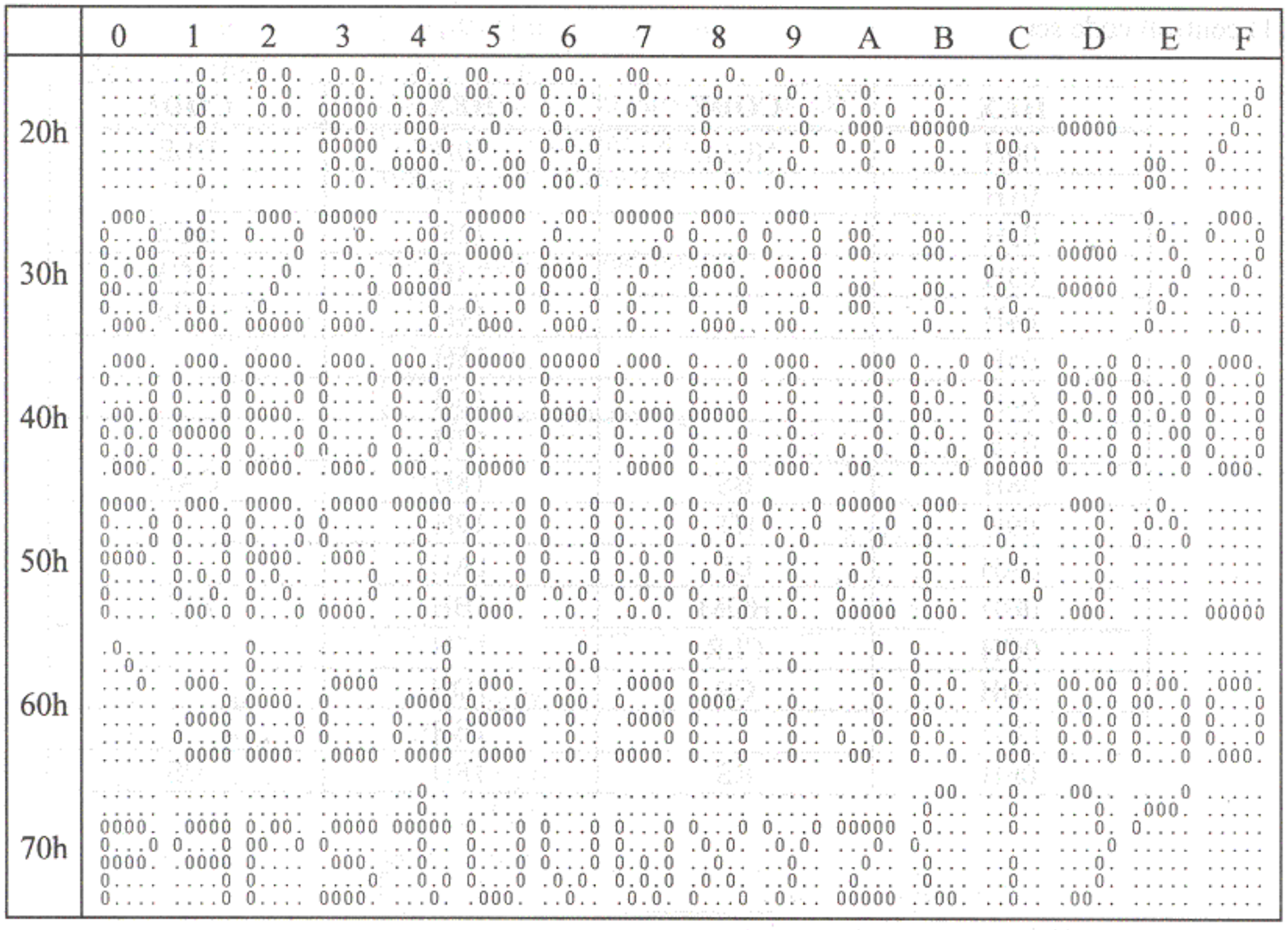
ESC = n /Select peripheral device,Display or Printer/
ASCII Format ESC = n
Dec. Format [027][061] n {n=1,2,3}
Hex. Format [1Bh][3Dh][n]
Description Select peripheral device
When n = 01h,enable printer,disable display
When n = 02h,disable printer,enable display
When n = 03h,enable printer,enable display

6 CHARACTER SET

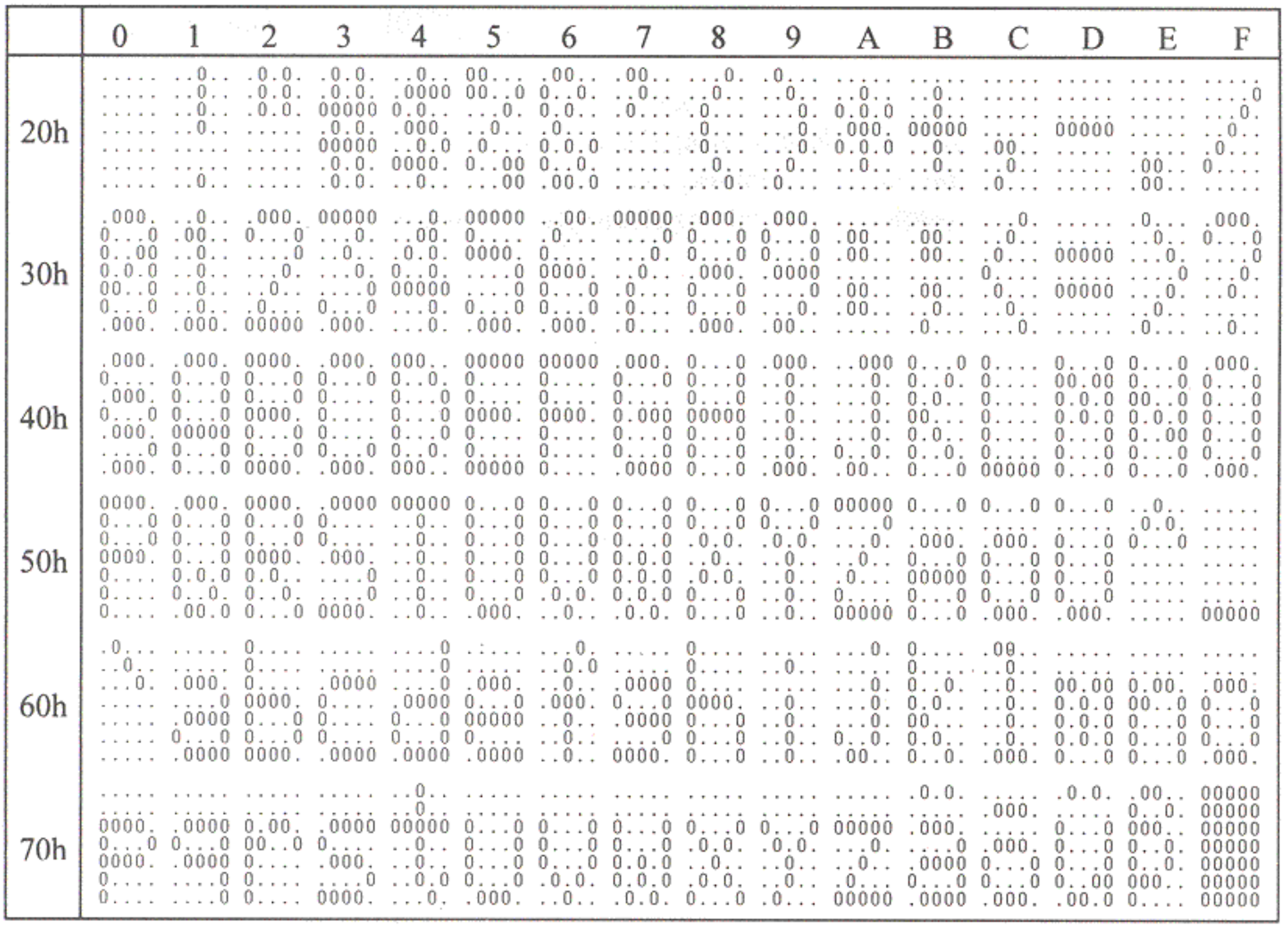
(1) controll code set

HEX	CODE	HEX	CODE
00H	NULL	10H	DLE
01H		11H	DC1
02H		12H	DC2
03H		13H	DC3
04H		14H	DC4
05H		15H	
06H		16H	
07H		17H	
08H	BS	18H	CAN
09H	HT	19H	
0AH	LF	1AH	
0BH	HOM	1BH	ESC
0CH	CLR	1CH	
0DH	CR	1DH	
0EH		1EH	
0FH	RS	1FH	US

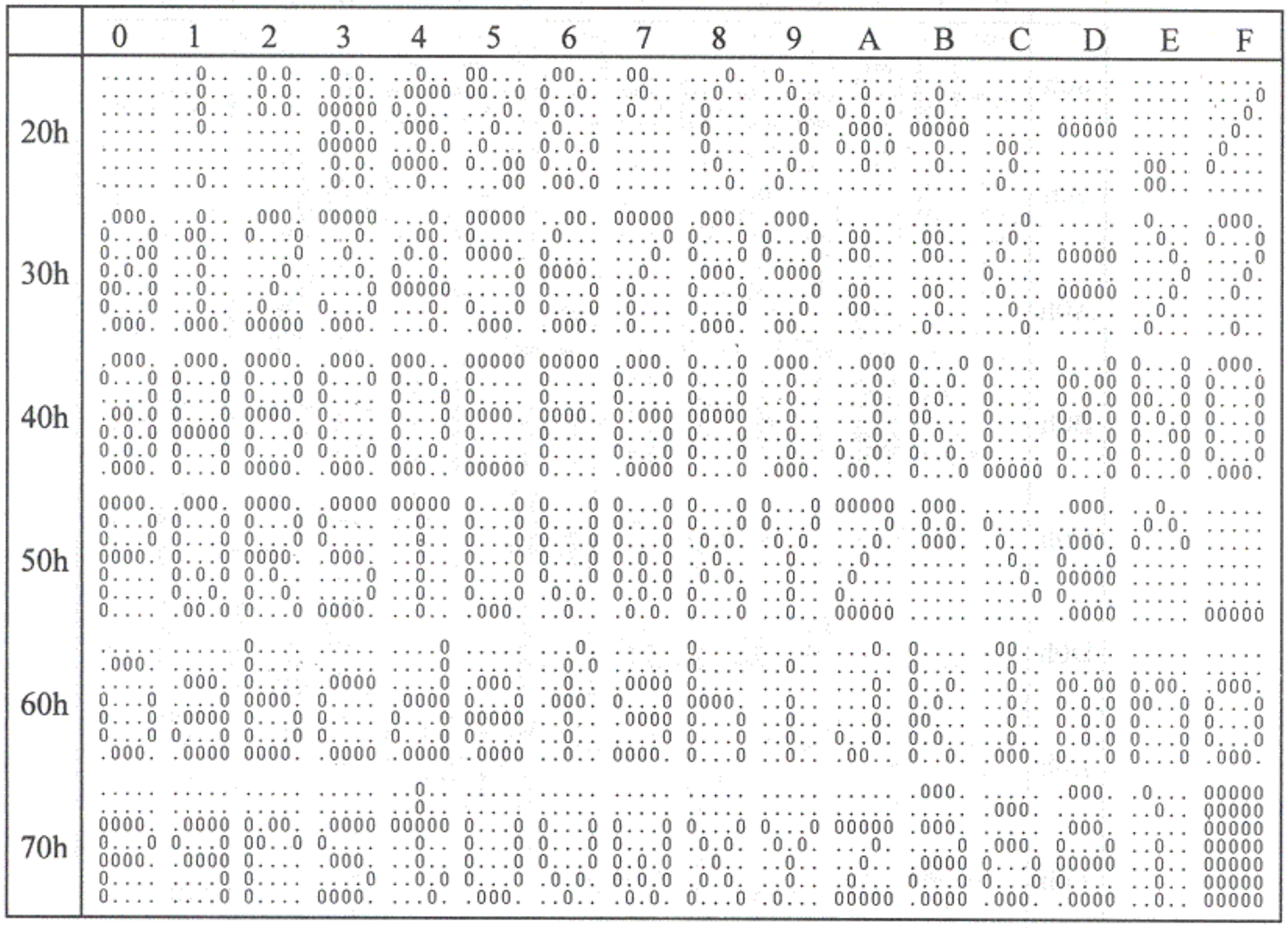
（２） U.S.A.　font　set



（３） GERMANY　font　set

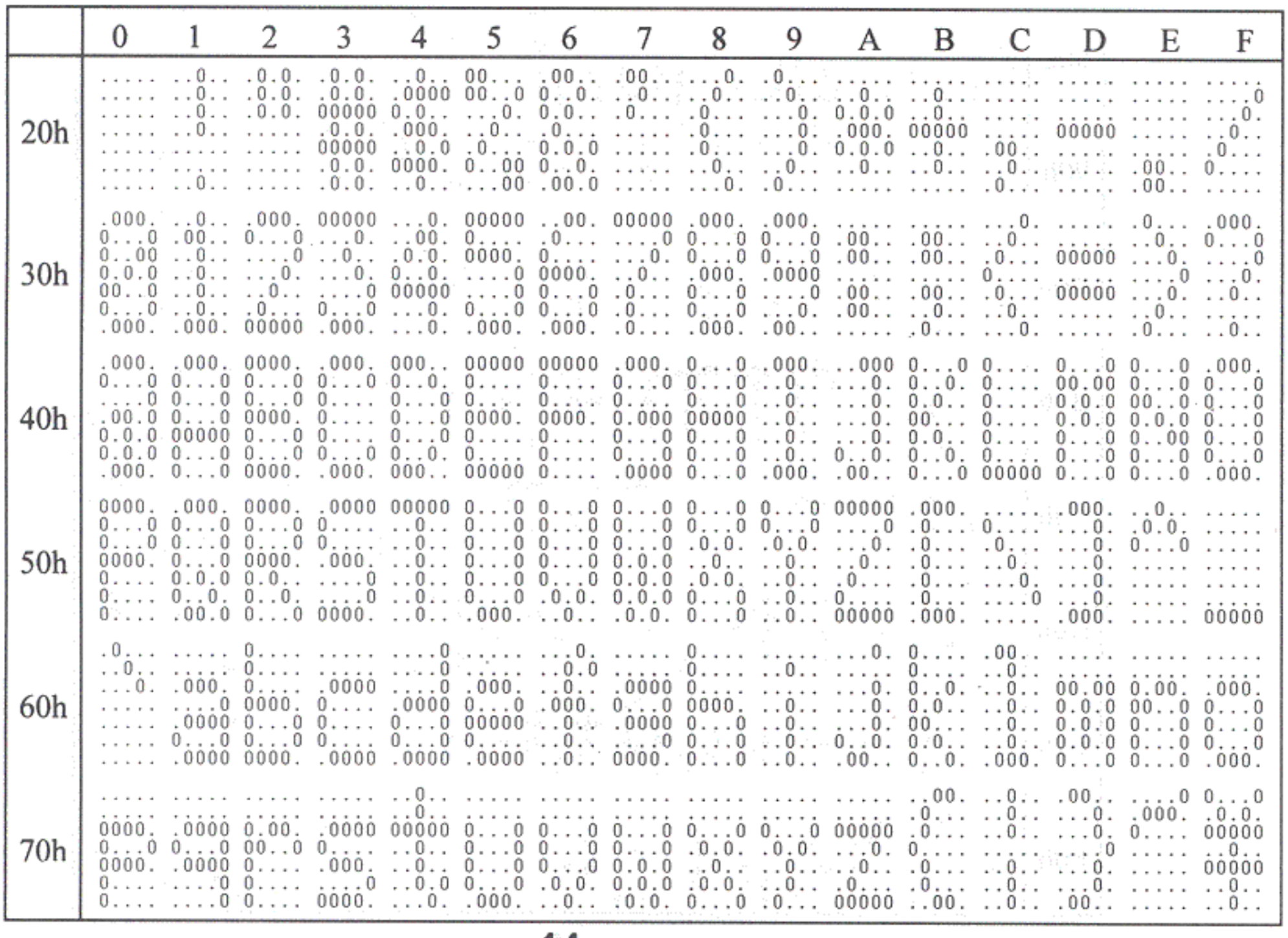


（4）ITALY font set



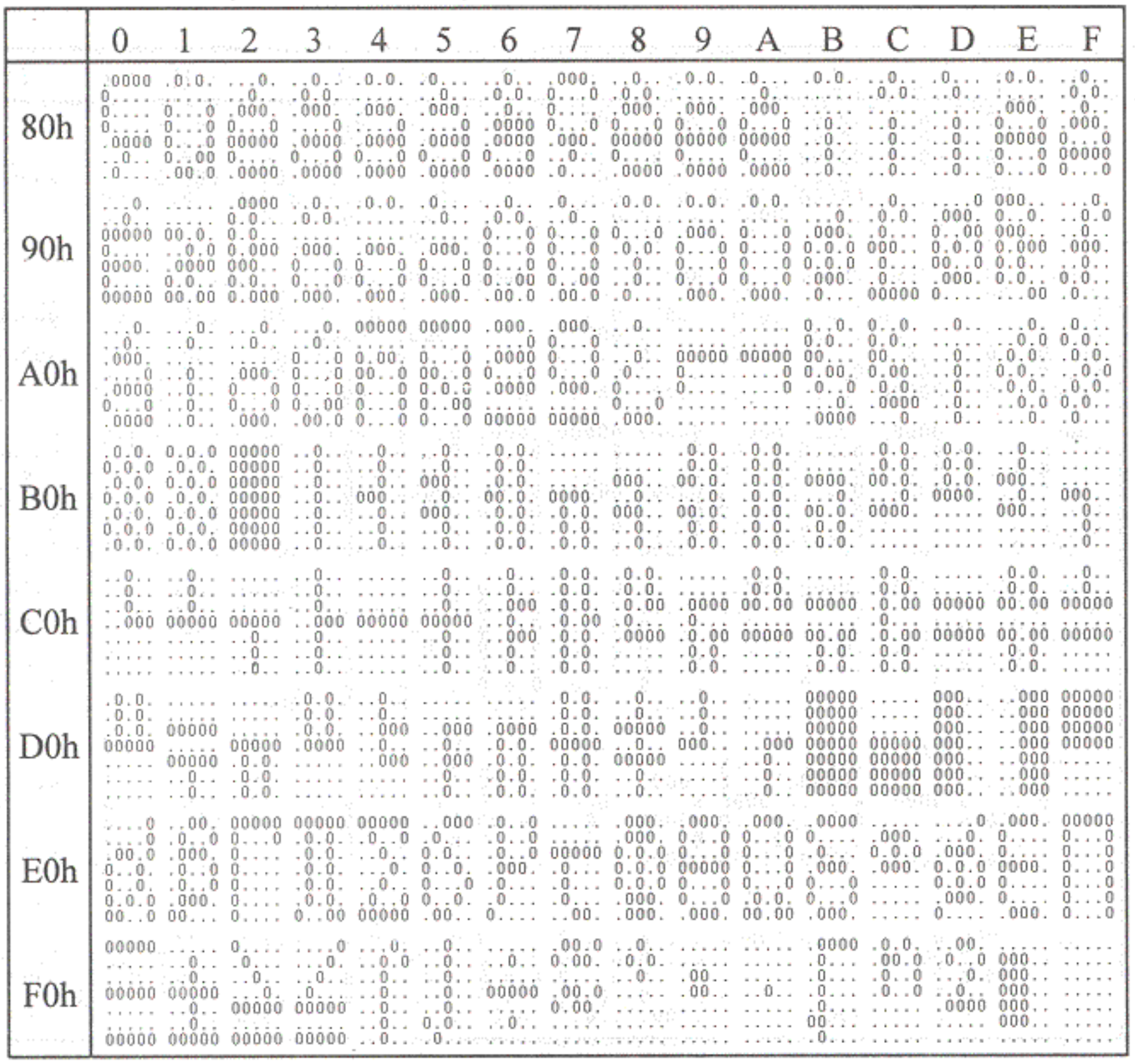
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20h																
30h																
40h																
50h																
60h																
70h																

（5）JAPAN font set

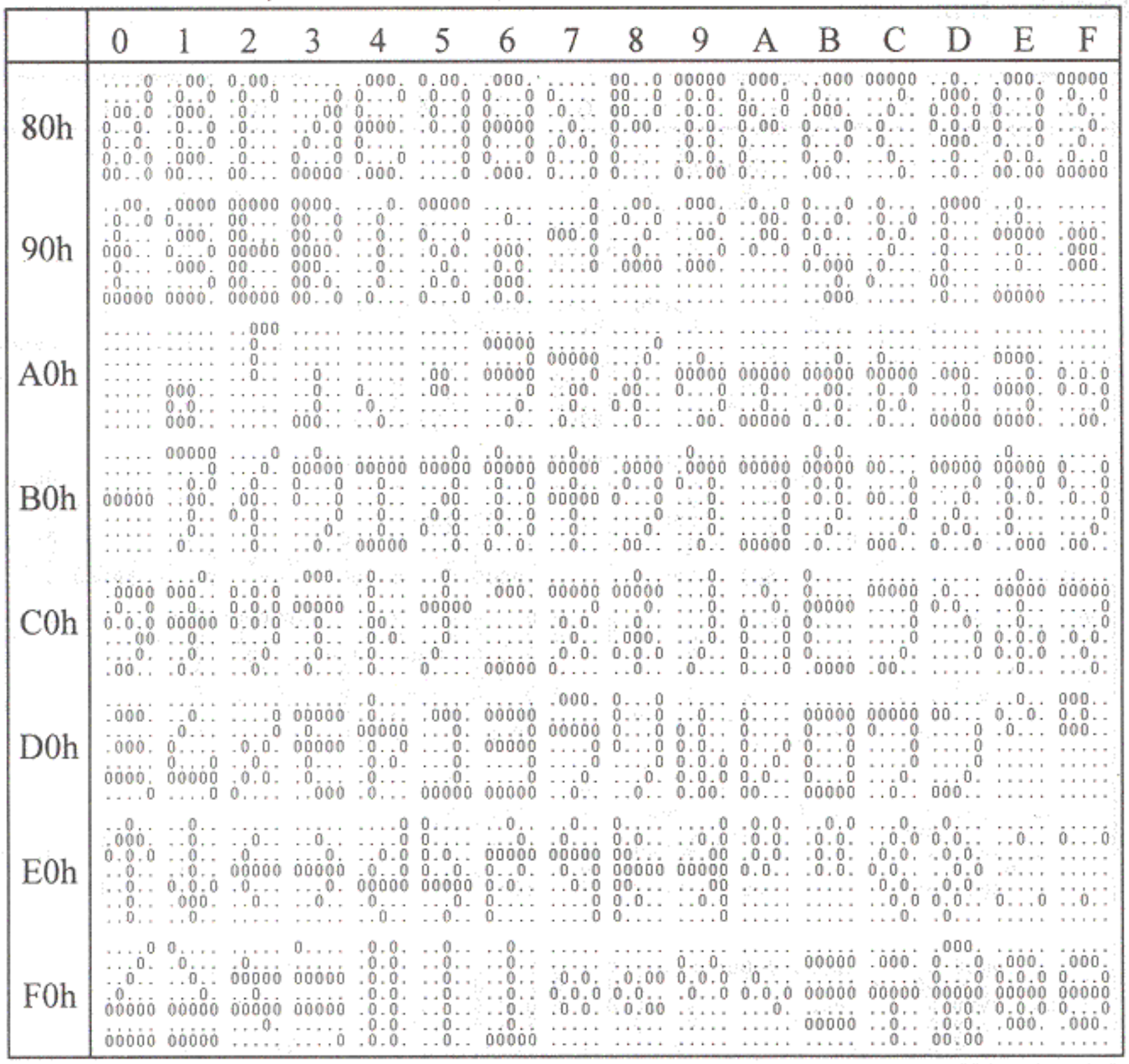


	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20h																
30h																
40h																
50h																
60h																
70h																

（6）ASCII font set （80h ~ FFh）



（7）JAPAN font set （80h ~ FFh）



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